

IN THE CLAIMS

1. (Currently Amended) A data processing device, comprising:
  - a plurality of data processing units;
  - a first memory shared for storing data, ~~wherein to which first memory~~ each of said data processing units makes an access to said first memory so as to perform an operation;
  - a transfer completion time designation unit ~~for designating~~ configured to designate a transfer completion time according to need, ~~wherein within which transfer completion time,~~ transferring the of data in response to the accesses made by said data processing units should be completed within the designated transfer completion time;
  - an expected transfer completion time calculation unit ~~for calculating~~ configured to calculate an expected transfer completion time needed for completing the data transfer in response to the accesses made by said data processing units, said expected transfer completion time calculation unit ~~calculating~~ configured to calculate the expected transfer completion time ~~by taking~~ based on a current access status of said first memory ~~into consideration~~; and
  - an access management unit ~~for managing~~ configured to manage the access to said first memory based on the designated transfer completion time and the expected transfer completion time.

2. (Currently Amended) The device as claimed in claim 1, ~~said device~~ further comprising:
  - a second memory ~~for storing~~ configured to store the data stored in said first memory, said second memory having a transfer rate lower than a transfer rate of said first memory;wherein,

when ~~the~~ a data transfer is executed between said first memory and said second memory, said expected transfer completion time calculation unit ~~calculates~~ is configured to calculate the expected transfer completion time ~~by taking based on~~ the data transfer rates of said first memory and said second memory ~~into consideration~~.

3. (Currently Amended) The device as claimed in claim 1, wherein:

when one of the data processing units makes an additional access to said first memory, said access management unit ~~prevents~~ is configured to prevent or ~~postpones~~ postpone the additional access to said first memory when the expected transfer completion time exceeds the designated transfer completion time.

4. (Currently Amended) The device as claimed in claim 1, wherein:

said data processing device is an image-forming device provided with, as one of the data processing units, ~~unit~~ as an image input unit for inputting image data to said first memory, and ~~one~~ as another of the data processing ~~unit~~ as units, an image output unit for outputting the image data stored in said first memory.

5. (Currently Amended) A data processing device, comprising:

a plurality of data processing means;

first memory means shared for storing data, wherein ~~to which first memory means~~ each of said data processing means makes an access to said first memory means so as to perform an operation;

transfer completion time designation means for designating a transfer completion time according to need, ~~within which transfer completion time~~ wherein, ~~transferring the~~ transfer of

data in response to the accesses made by said data processing means should be completed within the designated transfer completion time;

expected transfer completion time calculation means for calculating an expected transfer completion time needed for completing the data transfer in response to the accesses made by said data processing means, said expected transfer completion time calculation means calculating the expected transfer completion time ~~by taking~~ based on a current access status of said first memory means ~~into consideration~~; and

access management means for managing the access to said first memory means based on the designated transfer completion time and the expected transfer completion time.

6. (Currently Amended) The device as claimed in claim 5, ~~said device~~ further comprising:

second memory means for storing the data stored in said first memory means, said second memory means having a transfer rate lower than a transfer rate of said first memory means; wherein,

when ~~the~~ a data transfer is executed between said first memory means and said second memory means, said expected transfer completion time calculation means calculates the expected transfer completion time ~~by taking~~ based on the data transfer rates of said first memory means and said second memory means ~~into consideration~~.

7. (Currently Amended) The device as claimed in claim 5, wherein:

when one of the data processing means makes an additional access to said first memory means, said access management means prevents or postpones the additional access to said first memory means when the expected transfer completion time exceeds the designated transfer completion time.

8. (Currently Amended) The device as claimed in claim 5, wherein:

said data processing device is an image-forming device provided with, as one of the data processing means, as an image input means for inputting image data to said first memory means, and ~~one~~ as another of the data processing means, as an image output means for outputting the image data stored in said first memory means.

9. (Canceled).

10. (Currently Amended) A computer-readable recording medium storing a program for executing on a computer, the program causing the computer to perform the functions steps of:

~~a plurality of data processing units;~~

~~a first memory shared for storing data, to which first memory each of the data processing units makes an access so as to perform an operation;~~

~~a transfer completion time designation unit for designating a transfer completion time according to need, within which transfer completion time~~ wherein, transferring the transfer of data in response to the accesses made to a first memory for storing data by said a plurality of data processing units should be completed within the designated transfer completion time;

~~an expected transfer completion time calculation unit for calculating an expected transfer completion time needed for completing the data transfer in response to the accesses made by said data processing units, said expected transfer completion time calculation unit calculating the expected transfer completion time by taking~~ based on a current access status of said first memory ~~into consideration; and~~

~~an access management unit~~ for managing the access to said first memory based on the transfer completion time and the expected transfer completion time.

11. (Currently Amended) An image-forming device, comprising:

an image input unit;

an image output unit;

a storage unit ~~for storing~~ configured to store an image signal provided from said image input unit in a primary storage part, and ~~storing to store~~ the image signal stored in the primary storage part in a secondary storage part;

a delivering unit ~~for delivering~~ configured to deliver the image signal stored in the primary storage part, which image signal is read out from the secondary storage part, to said image output unit; and

a priority designation unit ~~for designating~~ configured to allow a user to designate a priority for each of a plurality of image signal input/output operation requests.

12. (Currently Amended) The image-forming device as claimed in claim 11, ~~said device~~ further comprising:

a request acceptance unit ~~for accepting~~ configured to accept the image signal input/output operation requests;

a processing order control unit ~~for determining~~ configured to determine a processing order of the image signal input/output operation requests based on respective priorities designated by said priority designation unit; and

an interruption/resumption control unit ~~for interrupting~~ configured to interrupt a current image signal input/output operation request when the priority of the current image signal input/output operation request is lower than a highest priority of an image signal

input/output operation request among the image signal input/output operation requests, and for resuming the current image signal input/output operation request after completion of the image signal input/output operation request with the highest priority.

13. (Original) The image-forming device as claimed in claim 12, said device further comprising:

a selection unit for selectively executing the control of said processing order control unit and said interruption/resumption control unit.

14. (Currently Amended) An image-forming device comprising:

image input means;

image output means;

storage means for storing an image signal provided from said image input means in a primary storage part, and storing the image signal stored in the primary storage part in a secondary storage part;

delivering means for delivering the image signal stored in the primary storage part, which image signal is read out from the secondary storage part, to said image output means; and

priority designation means for allowing the user to designate a ~~designating~~ priority for each of a plurality of image signal input/output operation requests.

15. (Original) The image-forming device as claimed in claim 14, said device further comprising:

request acceptance means for accepting the image signal input/output operation requests;

processing order control means for determining a processing order of the image signal input/output operation requests based on respective priorities designated by said priority designation means; and

interruption/resumption control means for interrupting a current image signal input/output operation request when the priority of the current image signal input/output operation request is lower than a highest priority of an image signal input/output operation request among the image signal input/output operation requests, and for resuming the current image signal input/output operation request after completion of the image signal input/output operation request with the highest priority.

16. (Original) The image-forming device as claimed in claim 15, said device further comprising:

selection means for selectively executing the control of said processing order control means and said interruption/resumption control means.

17. (Currently Amended) A data processing device, comprising:

a plurality of data processing units;

a first memory shared for storing data, ~~to which first memory~~ wherein each of said data processing units makes an access to said first memory so as to perform an operation;

a transfer completion time designation unit ~~for designating~~ configured to designate a transfer completion time according to need, ~~within which transfer completion time,~~ transferring the wherein transfer of data in response to the accesses made by said data processing units should be completed within the designated transfer completion time;

an expected transfer completion time calculation unit ~~for calculating~~ configured to calculate an expected transfer completion time needed for completing the data transfer in

response to the accesses made by said data processing units, said expected transfer completion time calculation unit ~~calculating~~ configured to calculate the expected transfer completion time ~~by taking based on a~~ current access status of said first memory ~~into consideration~~;

an access management unit ~~for managing~~ configured to manage the access to said first memory based on the designated transfer completion time and the expected transfer completion time; and

a priority designation unit configured to allow a user to designate a ~~for designating~~ priority for each of the accesses made by said data processing units.

18. (Currently Amended) A data processing device, comprising:

a plurality of data processing means;

first memory means shared for storing data, ~~to which first memory~~ wherein each of said data processing means makes an access to said first memory so as to perform an operation;

transfer completion time designation means for designating a transfer completion time according to need, ~~within which transfer completion time wherein,~~ transferring the transfer of data in response to the accesses made by said data processing means should be completed within the designated transfer completion time;

expected transfer completion time calculation means for calculating an expected transfer completion time needed for completing the data transfer in response to the accesses made by said data processing means, said expected transfer completion time calculation means calculating the expected transfer completion time ~~by taking based on a~~ current access status of said first memory means ~~into consideration~~;



access management means for managing the access to said first memory means based on the designated transfer completion time and the expected transfer completion time; and

priority designation means for ~~designating~~ allowing a user to designate a priority for each of the accesses made by said data processing means.

19. (Currently Amended) A data processing device, comprising:

a unit ~~for receiving~~ configured to receive a plurality of data transfer process requests;

a unit ~~for calculating~~ configured to calculate a required process time necessary for executing all data transfer processes corresponding to the data transfer process requests in a time-sharing process manner, when at least one data transfer process has a time constraint; and

a unit ~~for executing~~ configured to execute in the time-sharing process manner all data transfer processes except for data transfer processes that should be excluded from those data transfer processes to be executed for the purpose of satisfying the time constraint, when the calculated required process time exceeds the time constraint for ~~the~~ a relevant at least one data transfer process.

20. (Currently Amended) The data processing device as claimed in claim 19, wherein:

said unit ~~for executing~~ configured to execute in the time-sharing process manner all data transfer processes except for data transfer processes that should be excluded from those data transfer processes to be executed for the purpose of satisfying the time constraint ~~selects~~ is configured to select the data transfer processes to be excluded from those data transfer processes to be executed for the purpose of satisfying the time constraint, based on predetermined priority information provided to respective data transfer processes.

21. (Original) The data processing device as claimed in claim 20, wherein:  
the data transfer processes that should be excluded comprise those data transfer processes having a lower priority in said predetermined priority information.

22. (Currently Amended) A data processing device, comprising:  
means for receiving a plurality of data transfer process requests;  
means for calculating a required process time necessary for executing all data transfer processes corresponding to the data transfer process requests in a time-sharing process manner, when at least one data transfer process has a time constraint; and  
means for executing in the time-sharing process manner all data transfer processes except for data transfer processes that should be excluded from those data transfer processes to be executed for the purpose of satisfying the time constraint, when the calculated required process time exceeds the time constraint for ~~the~~ a relevant at least one data transfer process.

23. (Original) The data processing device as claimed in claim 22, wherein:  
said means for executing in the time-sharing process manner all data transfer processes except for data transfer processes that should be excluded from those data transfer processes to be executed for the purpose of satisfying the time constraint selects the data transfer processes to be excluded from those data transfer processes to be executed for the purpose of satisfying the time constraint based on predetermined priority information provided to respective data transfer processes.

24. (Original) The data processing device as claimed in claim 23, wherein:

the data transfer processes that should be excluded comprise those data transfer processes having a lower priority in said predetermined priority information.